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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,806	04/12/2001	Akira Arai	9319A-000202	1937

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EXAMINER

SHEEHAN, JOHN P

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 08/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/833,806

Applicant(s)

ARAI ET AL.

Examiner

John P. Sheehan

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12, 13, and 15-17 is/are rejected.
- 7) ☒ Claim(s) 9 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>January 13, 2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Withdrawal of Allowability

1. The Examiner acknowledges receipt of the information disclosure statement submitted January 13, 2003. In view of the prior art cited in said information disclosure statement the allowance of claims 1 to 9 and 12 to 17 has been withdrawn and the claims are rejected as set forth below.

Information Disclosure Statement

1. The information disclosure statement filed January 13, 2003 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, of the document entitled "Japanese Office Action" as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information. The document entitled "Japanese Office Action" has been placed in the application file, but has not been considered. The Examiner has otherwise considered the information disclosure statement.

Examiner's Amendment

2. Applicants' are reminded that when this application had originally been allowed an Examiner's Amendment (mailed December 16, 2002) had been entered changing the dependency of claim 17 from claim 10 to claim 1. Accordingly, claim 17 now depends from claim 1.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 15 to 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Toshio et al. (Toshio, Japanese Patent Document No. 09-271909, cited by the applicants in the IDS submitted January 13, 2003).

Toshio teaches a specific example of a cooling roll having a groove wherein the groove has a width of 30 microns and a pitch of 16 microns (See the English language translation submitted by the applicants, paragraph 15, line 8) this example is encompassed by applicants' claims 1 and 15 which recite a groove width of 0.5 to 90 microns and a pitch of 0.5 to 100 microns respectively. In view of Toshio's Figures a-c wherein the grooves extend to the edge of the cooling roll, Toshio is also considered to teach that the grooves have openings located at the peripheral edges of the circumferential surface as recited in claim 16.

Toshio does not explicitly disclose the ratio of the area of the grooves to the total area of the cooling roll, however the Examiner considers that the ratio of the groove width to the sum of the groove width and groove pitch is equivalent to the ratio of the area of the grooves to the total area of the cooling roll. Based on Toshio's example:

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{30}{16+30} = 0.65 \text{ or } 65\%$$

Thus, this example teaches a groove width of 30 microns and a ratio of the grooves to the total area of the cooling roll of 65% which is encompassed by applicants' claim 17, which recites a ratio of the groove area to the total area of the cooling roll encompassed by the instant claims value of 10 to 99.5%.

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 8 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Toshio et al. (Toshio, Japanese Patent Document No. 09-271909, cited by the applicants in the IDS submitted January 13, 2003).

Toshio teaches a specific example of a cooling roll having a groove wherein the groove has a width of 30 microns and a pitch of 16 microns (See the English language translation submitted by the applicants, paragraph 15, line 8) this example is encompassed by applicants' claim 8.

The claims and Toshio differ in that Toshio does not teach a method of making the disclosed cooling roller.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the process limitation

recited in applicants' product by process claim 8 does not necessarily lend patentability to the claimed product, MPEP 2113.

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

It is noted that the use of a rejection under 35 USC 102/103 for product by process claims as set forth above has been approved by the courts, see MPEP 2113.

"[T]he lack of physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Claim Rejections - 35 USC § 103

5. Claims 1, 2, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshio et al. (Toshio, Japanese Patent Document No. 09-271909, cited by the applicants in the IDS submitted January 13, 2003).

Toshio teaches a grooved cooling roll wherein the grooves have a width of 0.1 to 50 microns that prevent the molten alloy from entering the grooves (machine translation, paragraph 0013), which overlaps applicants' claim 1. Toshio teaches that the cooling roll includes a roll base and an outer surface layer as recited in applicants' claim 2 (machine translation paragraph 0011). Toshio teaches that the groove depth should be 10 microns or more (machine translation, paragraph 0013), which overlaps the groove depth recited in applicants' claim 12. Toshio also teaches that the angle of the groove relative to direction of rotation is 20 to 900 (paragraph 0012), which overlaps the angle of the groove recited in applicants' claim 13.

Toshio and the claims differ in that Toshio does not teach the exact same groove width, depth and angle as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the groove width, depth and angle taught by Toshio overlap the instantly claimed groove width, depth and angle and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

6. Claims 3 and 5 to 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshio as applied to claims 1, 2, 12 and 13 above, and further in view of Fukuno et al. (Fukuno, US Patent No. 5,665,177).

Toshio teaches a grooved cooling roll wherein the grooves have a width of 0.1 to 50 microns that prevent the molten alloy from entering the grooves (machine translation, paragraph 0013). Toshio teaches that the cooling roll includes a roll base and an outer surface layer (machine translation paragraph 0011).

Fukuno teaches a cooling roll for manufacturing a ribbon shaped metal alloy material wherein the cooling roll has a grooved surface. Fukuno teaches that to minimize variation in the crystal size of the product, that is, to make a more uniform product, the cooling roll is preferably comprised of a base and a surface layer wherein the surface layer has a lower thermal conductivity than the base of the cooling roll (column 6, lines 65 to column 7, line 6). As an example of the thermal conductivity of the cooling roll outer surface layer Fukuno teaches a thermal conductivity that overlaps applicants' claim 5 (column 7, lines 3 to 6). Fukuno teaches a cooling roll surface layer having a thickness of 10 to 100 microns (column 7, lines 18 to 20) that overlaps the surface layer thickness recited in applicants' claim 7.

The claims and Toshio differ in that Toshio does not teach, a cooling roll wherein the base and a surface layer have different thermal conductivity, the thermal conductivity of the surface layer, the thickness of the surface layer nor the thermal expansion coefficient as recited in applicants' claim 6.

However, one of ordinary skill in the art at the time the invention was made would have been motivated to modify Toshio's cooling roll so that the base and the surface layer have different thermal conductivity, the thermal conductivity of the surface layer taught and the thickness of the surface layer taught by Fukuno so as to minimize the variation in crystal grain size and make a more uniform product as taught by Fukuno.

7. Claims 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toshio in view of Fukuno as applied to claims 3, 5 and 7 above, and further in view of Sukeyoshi et al. (Sukeyoshi, Japanese Patent Document No. 10-317110).

Toshio and Fukuno teach and are applied as set forth above. Fukuno additionally teaches that the surface layer for the cooling roll can be chromium (column 6, line 67).

Sukeyoshi teaches that for the purpose of forming the surface layer on a cooling roll chromium and alumina are equivalent, that is chromium and alumina are art recognized equivalents for the same purpose (see the English language Abstract).

The combination of Toshio in view of Fukuno does not teach the use of a ceramic as the surface layer for the cooling roll.

However one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because Sukeyoshi teaches that

chromium and alumina are art recognized equivalents for the same purpose, substitution of art recognized equivalents is obvious, MPEP 2144.06.

Allowable Subject Matter

8. Claims 9 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: None of the references alone or in combination teach or suggest a cooling roll as recited in claim 1 wherein the cooling roll has a surface roughness Ra of 0.05 to 5 microns where the gas expelling grooves are not provided as recited in claim 9 nor an embodiment wherein the gas expelling groove has a spiral configuration as recited in claim 14.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Sheehan whose telephone number is (571) 272-1249. The examiner can normally be reached on T-F (6:45-4:30) Second Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Art Unit: 1742

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

A handwritten signature in black ink, appearing to read "John P. Sheehan", with a stylized, flowing script.

John P. Sheehan
Primary Examiner
Art Unit 1742

jps
July 20, 2004